

Cocaine
Inhalants
& LSD

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Cannabis, also known as marijuana, "grass", "pot", and "dope", has become something of a rival to alcohol in recent years. Since the mid-sixties, Canadians and Americans of all ages and in ever-increasing numbers have begun to use it regularly. The latest documented findings reveal that by 1970 more than one million Canadians had used cannabis in one form or another. Presently illegal, marijuana and its more potent cousin, "hashish" or "hash", are unquestionably popular. However, legalization is an issue hotly debated and still to be resolved in the nation's courts.

In parts of Asia, the Middle East and North Africa, cannabis has been used for centuries as an intoxicant. In India, it has been traditionally used in food and beverage preparations for religious and social occasions. In addition to its uses as an intoxicant, cannabis, under the name Indian Hemp, has been used as a source of fibre for the manufacture of rope, canvas and linen.

Cannabis has been used as a folk medicine in Asia, Africa and America for generations. In fact, until about 1940, extract of cannabis was commonly marketed throughout North America for a wide range of medical uses. In Britain, such pharmaceutical preparations are still prescribed on a controlled basis. Recently cannabis has begun to be prescribed for the relief of side effects of radiation therapy and as a possible cure for glaucoma. However, these uses are still experimental.

Modern society's recreational use of cannabis might be said to have stemmed from "The Noble Experiment" (Prohibition) in the United States. An increase in cannabis trade during the Prohibition period of the 1930's was followed by campaigns and statutes which virtually prohibited its use. Canada had prohibited it in 1923.

Until World War II, recreational use of cannabis was confined to "fringe" elements of society. As it gradually spread to student groups in the early and mid-sixties, the media attracted public attention to the widening use of the drug. Today cannabis rivals alcohol as an intoxicant and is used by student, socialite, lawyer and lumberjack alike.

Popularly called marijuana, Cannabis Sativa L. is an herbaceous annual plant which grows wild in many parts of the world. Given a reasonable amount of sunshine and water, mari-

juana plants can be grown in most parts of Canada. Cannabis comes in two forms: marijuana, which is usually considered to be the dried leaves and flowering tops of the plant; and hashish, which is derived from the resin of the plant and takes the form of solid chunks ranging in color from light brown to black. Hash may also be found in liquid form (hash oil), which is highly concentrated and potent. Both marijuana and hash may be smoked or added to cooked foods, the most famous of which is the "brownie". Hash oil is usually used to enhance the effect of a marijuana cigarette and is rarely, if ever, injected in social use.

The main active ingredients in marijuana are called cannabinoids, of which THC (tetrahydrocannabinol) is considered to be the most important. Pure THC is almost never sold on the street. Potency of the drug varies considerably. Marijuana contains from 0.5 to 0.75% THC, while hash contains about 5%. Thus, hash is approximately 5 to 10 times as potent as marijuana.

Physical Effects of Cannabis

Dosage, form and potency of the drug, as well as user mode and the circumstances in which the drug is taken, allow a wide variety of effects. Those experiencing the drug for the first time sometimes report no effect at all. In one survey of regular users, 32% reported no effects, 55% had some pleasant effects and 13% had some mild ill effects with their first use of marijuana or hash.

When smoked, cannabis produces effects ranging from a mild stimulation to simple hallucination (although this last is quite rare). A feeling of tranquility and an enrichment of sensory perception is often experienced. Heightened imagination and feelings of increased creativity are also felt, although brilliant ideas generated by the use of the drug are hard to recall later on. Experienced users can generally function socially, even after high doses, without detection by the casual observer. However, some cannabis users report an inability to follow a train of thought in a conversation.

Although it is widely believed that cannabis has a positive effect on sexual activity, there is little to indicate whether this is in fact so. Inhibitions are lessened, but the generally introspective nature of the drug's effect would tend to counteract normal

stimulation. Usually appetite for food is heightened, however. Like many forms of mental stimulation, the circumstances under which cannabis is taken, together with the personality and mood of the user, will determine the perceived effects of the drug.

Physiological effects are confined to a moderate increase in the heart rate and blood pressure which subsides in a few hours. A slight reddening of the eyes (conjunctivitis) has sometimes been observed.

When cannabis is eaten, the effects are much the same except that they appear later and last longer than if it is smoked.

Hazards of Cannabis Use

In susceptible individuals, cannabis may trigger a psychotic reaction, although such persons usually discontinue use of the drug after an initial encounter. In general, adverse reaction to the drug is rare, and cases which do occur are often the result of preconditioning which leads to a panic reaction to the drug's unfamiliar effects.

Among the unpleasant effects experienced by regular users are fear, anxiety, depression, irritability, nausea, headache, backache and dizziness. Whether these are experienced depends on the mood of the user. Less common effects are disorientation, depersonalization, suspiciousness and paranoia. Very occasionally, feelings of panic and depression are encountered. Such adverse reactions are rare and usually subside as the effects of the drug wear off.

Cannabis poisonings are infrequent and death due to overdose is extremely rare. This is partly due to the fact that the poisonous element in cannabis is very small, and to the traditions governing its use.

Contrary to past belief, marijuana use is seldom associated with acts of aggression or violence. In fact, the World Health Organization has stated that cannabis is less likely than alcohol to produce signs of aggressiveness. Most users feel relaxed and peaceful while under the influence; indeed, this fact is probably the reason for the relatively few traffic accidents directly attributed to cannabis usage. The user simply lacks the motivation to go anywhere. The limited evidence available suggests that driving should be avoided while affected by cannabis, particularly if it has been combined with alcohol.

Tolerance/Dependence/Withdrawal

The evidence available indicates that unlike other drugs, moderate or intermittent use of cannabis does not require an increase in dosage to achieve the desired effect. In fact, in the initial stages of use, the individual usually undergoes a "reverse tolerance" or sensitization to the effects of the drug, and smaller quantities are sufficient for effects to occur. As use is repeated, a learning process takes place which allows the user to compensate for the effects of the drug in behavioural and psychological tasks. The LeDain Cannabis Report of 1970 found that there are generally no signs of physical dependence and consequent withdrawal problems when use is stopped.

Regular use of cannabis may lead to psychological dependence to some degree in that the drug attains a central place in thoughts and activities. At the present time, recreational use of cannabis in North America does not appear to result in the physical craving associated with tobacco or heroin.

While the use of other drugs, legal and illegal, is more prevalent among cannabis users than non-users, there is little indication that its use leads *directly* to use and abuse of such drugs as heroin and cocaine. However, peer group pressure and contact with dealers who usually sell other drugs do provide a connection. The combined use of cannabis and alcohol, particularly beer and wine, is common, although the LeDain Commission found that total consumption of alcohol often declined when cannabis use began.

There is a close association between cannabis and tobacco use since cigarette smokers are accustomed to smoke inhalation, and vice versa.

Cannabis Treatment

Because cannabis use does not lead to physical dependence or withdrawal, treatment programs for users are generally oriented toward counselling for psychological dependence and modification of abusive lifestyle patterns.

Cannabis and Society

The use of marijuana and hash is concentrated primarily but not exclusively in the younger age groups. In Canadian high schools, rates of use range from 20% to 50%, although a leveling off has been noted since 1970, with a corresponding rise in the use of alcohol. Use is higher at the college and university level, although there is also a tapering trend noted among this age group. The LeDain Commission found that in 1970, 3.4% of Canadian households contained one or more users. Persons in their twenties and thirties and older, leading conventional lifestyles, used cannabis in much the same way as alcohol and it appears that their numbers are increasing.

On the other hand, surveys have also indicated that from 20% to 50% of respondents who admitted use also claimed to have discontinued use after a period of time. Reasons given ranged from a change in lifestyle such as marriage, to the fact that they found the experience ineffectual, uninteresting or unpleasant.

For those who continue use, the evidence indicates a moderate rate of consumption with fewer than 10% reporting using the drug every day or several times a week.

In North America, curiosity is the primary reason for trying out cannabis, followed by peer group pressure or the desire to belong to, or associate with, a group who are users.

Many people state that they use marijuana simply because it is pleasurable, the same reason as is given for the use of alcohol. Invariably it is smoked with the intention of getting high and experiencing certain effects - notably increased awareness, perception and sensitivity. Learning to recognize and appreciate the effects of a high precedes acquiring a taste for cannabis.

Sometimes cannabis is used to combat fatigue, anxiety, tension or depression.

First use of cannabis is almost always at a social event and regular users continue it as an aid or adjunct to the enjoyment of movies, music, sex or small parties. This recreational use is relaxed and non-compulsive and with the lessening of the penalties for simple possession, reasonably commonplace.

Recent research information indicates that with long-term

use, the patterns of cannabis consumption change. Although there is no indication that lasting harmful effects occur with prolonged use, there have been clinical accounts of "subtle personality changes". Some reports also indicate that a so-called "amotivational syndrome" may appear. This is characterized by apathy, loss of effectiveness and reduced ambition. It is possible that these effects may be related as much or more to the lifestyle of the user than to the drug itself.

There is also some indication that long-term heavy inhalation may be as harmful to the lungs and respiratory system as tobacco. The necessity to hold the smoke in the lungs for as long as possible to speed up the effects tends to support this view. Continued research is necessary for conclusive proof or disproof.

Cannabis and the Law

Cannabis is regulated by the Narcotic Control Act of 1961. Anyone found guilty of possession of the drug is liable, upon summary conviction for a first offence, to a fine of \$1,000 or imprisonment for six months, or both. Continued offences carry increasingly severe punishments. Trafficking (the sale, distribution, transportation and import into or export out of Canada) is punishable by imprisonment from seven years to life. Illicit cultivation of cannabis is also an offence, carrying a penalty of up to seven years in prison.

Jail sentences for simple possession of the drug have virtually been abolished in recent years, although fines of several hundred dollars are common. Since more and more people are using cannabis, the question has been raised of the advisability of continued prohibition and the possibility of legalization. The LeDain Commission Cannabis Report presents a reasoned examination and correlation of all that is currently known about the drug's use. However, individual members of the Commission disagree on their recommendations for social policy. Until more facts are known, particularly regarding long term use, the legal fate of cannabis will be largely guided by political considerations. There are indications that the majority of the current voting public opposes legalization.

To prevent some of the ambiguity inherent in the term "opiate narcotics", the information contained on the following pages will use the term in reference only to opium, morphine and related alkaloids obtained from the opium poppy plant (*Papaver Somniferum*), or from the semi-synthetic derivatives of these alkaloids and wholly synthetic substances with similar pharmacological properties. This usage is in line with the LeDain Commission Final Report.

The best known opiate narcotic is morphine, the main alkaloid present in opium. The best known illicit opiate narcotic is heroin, derived from morphine.

Opium has been used for centuries in the Orient as a euphoriant. The effect of opium and its derivatives on society has been staggering. In one case, the so-called "Opium Wars" of the 1840's between Britain and China, the result was open conflict. Today North America in particular is beset by the social problems resulting from opium and its derivative, heroin.

Opium is obtained from the milky juice of the opium poppy plant. Of the more than 25 natural alkaloids contained in opium, only two - morphine, discovered in 1803, and codeine (1832), have wide medical use. Opiate narcotics were once commonly used as tranquilizers and anti-depressants. Today, morphine and its substitutes are used to relieve mild to severe pain, reduce coughing and treat diarrhea and dysentery. Morphine is also given prior to surgery to reduce anxiety and depression, and to promote sleep.

The major semi-synthetic products of morphine are heroin and Dilaudid but there are also hundreds of morphine-like drugs which have been developed, including methadone, piminodine, meperidine, propoxyphene and pentazocine. The latter three are better known as Demerol, Darvon and Talwin.

The LeDain Commission Final Report noted that the non-medical use of opiate narcotics (chiefly heroin) on a regular basis was a way of life for some 15,000 people in 1972. Today the figure is closer to 16,000, and research indicates that an additional 50,000 people may have used heroin occasionally.

While India is the prime legal producer of opiates, much of the current illicit supply comes from the Golden Crescent of Pakistan, Iran and Afghanistan. Previous sources have included

Southeast Asia and Turkey. Most of the current supply enters Canada through Vancouver.

Among non-medical users, methods of administration include intravenous injection (mainlining), subcutaneous injection (skin popping), sniffing (snorting) and smoking. Raw opium is most often smoked or taken orally.

Physical Effects of Opiate Narcotics

Pure opiate narcotics produce major effects on the central nervous system and bowel. Low doses produce physiological effects ranging from a feeling of body warmth and heaviness in the limbs to increased perspiration and constipation. Psychological effects are varied and may include apathy, lethargy and euphoria. Individuals injecting high doses of heroin intravenously experience an immediate "rush" sometimes described as a whole-body orgasm. This rush is not experienced when opiate narcotics are taken orally, smoked, sniffed or injected under the skin. Oral intake produces a slower, longer lasting and less intense effect.

The pleasure attained by the rush is the primary cause of abuse, with the user desiring repeated doses in order to experience the pleasure again.

Hazards of Opiate Narcotic Use

There are a number of recorded hazards, related to unrestricted use of opiate narcotics. These range from mild to fatal, but in general are the result of side effects rather than direct, chronic use of the drugs. Overdose is the most common fatal effect, brought about by a loss of tolerance after a period of abstinence, differences in the strength of the drugs, contaminants or simple ignorance (in the case of a beginner) as to the amount that may be safely used.

Signs of overdose include the usual lethargy followed by stupor, laboured breathing, coma and cessation of breath resulting in death. From 1969 to 1971, 220 opiate narcotic-related deaths were reported in Canada. Of these, about two-thirds involved the use of other drugs such as alcohol and barbiturates. These,

combined with an opiate narcotic, produce greater sedation and toxicity and consequently increase the risk of overdose.

Other causes of opiate narcotic-related deaths include allergic reaction to the heroin, reaction to injected bacteria or other foreign materials, or inhalation of vomit or other substances.

Non-fatal hazards are varied. A reduced ability to concentrate, rationalize and memorize, and a reduced interest in food are common; other effects include a decreased sex drive, menstrual irregularities and decreased red blood cell count.

Women who take opiate narcotics regularly during pregnancy risk obstetrical problems and fetal addiction. Babies born to opiate narcotic addicts frequently undergo withdrawal symptoms 24 hours to several days after birth. Symptoms of withdrawal include pinpoint pupils, excessive crying, restlessness, a decrease in breathing and heart rate and, rarely, convulsions.

Other hazardous side effects of chronic use are caused by the sharing of dirty needles, a practice that can spread pneumonia, hepatitis and tetanus and may cause infected heart valves, skin infections, scarred veins, ulcers and abscesses.

Generally, unhygienic living standards, poor eating and sleeping habits and inadequate medical care are also part of the user's world. Certainly, the risk of homicide and accidents is increased as a result of any criminal activity needed to support a habit.

Tolerance/Dependence/Withdrawal

When opiate narcotics are taken regularly at short intervals, tolerance develops rapidly, and the user must increase the dosage to achieve the desired effect. The rate of tolerance varies with the type of drug and the frequency of use. If use is only occasional, then little tolerance may develop. However, cross-tolerance, the tolerance developed to one narcotic resulting in tolerance to others, is almost certain. The most rapid tolerance is developed to the toxic effects of the drug. Long-term users are able to take doses several times the amount fatal to a novice. However, even chronic users can accidentally overdose and die.

The LeDain Commission Final Report states that not every case of opiate narcotic use leads to physical dependence. However, physical dependence does occur with regular use.

Sudden and abrupt abstinence from opiate narcotics use re-

sults in definite symptoms of withdrawal. The severity of the symptoms depends on the extent of use, the type of drug and the individual involved.

Withdrawal symptoms experienced by an intermittent user resemble common influenza. However, symptoms experienced by a heavy user are more severe. A running nose, watery eyes and perspiration occur some 8 to 12 hours after the last dose, followed by restlessness, loss of appetite, irritability and tremors. Thirty-six to seventy-two hours after the last dose, the symptoms reach their peak, and the user experiences chills alternating with flushing, nausea and vomiting, muscle spasms and diarrhea. Heart rate and blood pressure are elevated. Occasionally convulsions, coma and cardio-vascular collapse may occur.

Many chronic users kick the habit periodically on their own by going "cold turkey" without medical supervision. Complete physical recovery from severe withdrawal may take up to six weeks or longer, but usually occurs within a week.

Psychological dependence (the need to experience the drug's effects even in the absence of physical dependence) can, unless overcome, lead to a return to drug use.

Opiate Narcotics Treatment

The most difficult cases to treat appear to be teenagers and those in their early twenties, for these groups are most susceptible to psychological dependence relapse after withdrawal. Two general treatment forms are currently practiced:

Abstinence Oriented - Withdrawal is best accomplished in a drug-free environment. At times, drugs such as methadone may be temporarily used to assist on withdrawal and then gradually reduced. This, followed by total abstinence, and combined with social rehabilitation can be effective. Individual psychological support is used to aid and maintain abstinence. This method, as with involuntary abstinence through incarceration, has a very poor success rate. Even when abstinence is achieved, it may be replaced by another dependence such as alcohol, excessive eating or even the therapeutic community itself.

Methadone Maintenance - This appears to be the most promising of the current approaches to the problem. It involves replacing the uncontrolled dependence on opiate narcotics with a controlled dependence program utilizing methadone. The treatment goals are vocational and social rehabilitation. Methadone has the advantage of suppressing withdrawal symptoms while at the same time maintaining its effect on one oral dose per day. The drug's disadvantage lies in the fact that it is itself an addicting drug and can cause a pattern of abuse.

Opiate Narcotics and Society

Opiate narcotics abusers can be found at every level of society and are certainly not confined to the drug-oriented sub-culture or criminal element. Some may have developed patterns of abuse through medical treatment (a rare occurrence) or through self-medication resulting from accessibility of the drugs. Initially these individuals may begin by using narcotics to combat fatigue or job tensions. The dependent who is able to obtain drugs by legitimate means is, in general, difficult to distinguish from other persons.

The street heroin addict often has a history of delinquency and antisocial behaviour. Dependency generally starts in the late teens or early twenties through peer association. Since some two pounds per week is necessary to sustain a habit, and since the price, while not excessive on a per dose basis, is nevertheless a consistent outlay, the street addict often turns to crime as a means of support.

Explanations as to why some people become dependent on opiate narcotics and others don't, include a possible genetic or hereditary predisposition, the inability to cope with the stresses and pressures of living, or simply to suppress feelings of rage, hostility or frustration.

Opiate Narcotics and the Law

Under the terms of the Narcotic Control Act any person found in possession of narcotics is liable upon conviction to a fine of

\$1,000 or six months in jail or both for a first offence, with succeeding offences carrying stiffer penalties to a maximum of seven years imprisonment. Conviction on a charge of trafficking (the sale, distribution or transportation into or out of Canada of drugs defined under the Act as opiate narcotics) can result in a sentence of seven years to life.

Illegal cultivation of opium poppies carries a penalty of seven years.

To date, efforts at prevention include early identification of high risk persons, particularly chronic amphetamine users. The ultimate solution to the problem may entail the improvement of the life conditions which lead to drug abuse.

When the forces of Francisco Pizarro reached Peru in the 16th century and conquered the Inca Empire, they found a convenient and readily available means to achieve greater productivity in the mines by their Indian labour force . . . the coca bush.

In use throughout the Inca Empire for centuries, the leaves of the coca bush had been accorded divine status for their ability to "satisfy the hungry, provide the weary and faint with new vigour and cause the unhappy to forget their miseries". The method used was the "cocada", a ball of coca leaves and lime which produced feelings of euphoria and increased strength for about 40 minutes. Use was so widespread that a "cocada" was not only a measurement of time (about 40 minutes), but also of distance (about 2-3 kilometers, the amount a man could walk under the influence of the coca leaves).

The leaves of the Inca's divine plant contain from 0.5 to 1.5% cocaine by weight. Although other components of the leaves contribute to the effect when chewed, it is believed that cocaine is the major active ingredient. Because the Indians used (and use) cocaine in such a diluted form, spreading its effects out over a 40 minute period, they experience milder and less psychologically and physiologically destructive effects than do individuals in more civilized countries who have access to relatively pure cocaine.

The discovery and isolation of cocaine from coca leaves is usually attributed to Niemann, a Viennese who christened the

compound in 1858. However, there is a possibility that it was in use earlier under the name "Erythroxyline". Viewed as little more than an exotic curiosity by the medical profession, it was not until Carl Koller, an associate of Sigmund Freud, discovered that cocaine acted as a local anaesthetic that any interest was aroused.

By the end of the 19th century, cocaine had become a prime ingredient in a multitude of patent medicines and home remedies. Such exotica as "Dr. Pemberton's French Wine of Coca, the Ideal Tonic" were readily available in grocery stores across North America. As well, the presence of cocaine in soft drinks (Coca-Cola was originally a home remedy) continued until the passage of the Pure Food and Drug Laws in 1906 in the United States. Classified by the Harrison Narcotic Act of 1914 as a narcotic, cocaine was driven underground and virtually disappeared for the next forty years except in the fringe elements of society.

A relatively recent development in non-medical cocaine use is "freebasing". Instead of the usual "sniffing", users perform a simple chemical process in which a strong base is applied to the cocaine to draw off the cuttings or impurities used to extend the coke.

Unfortunately the freebase process only eliminates sugar cutting agents such as mannitol. If the coke has been cut with a salt such as lidocaine or procaine hydrochloride, the end product will be just as deeply adulterated. In its freebase form, cocaine cannot be sniffed since it is not water soluble. The method is to smoke it, usually in a water pipe.

The result is considered to be a far superior "high" to snorting or injection. However, using this method, the "high" lasts only for two or three minutes, necessitating further drug intake. The "crash" is also intensified.

Physical Effects of Cocaine

Cocaine, chemically known as benzoylmethyllecgonine, has a nitrogen base and shares the three characteristics common to most other local anaesthetics: an aromatic residue, an intermediate chain, and an amino group. The drug's most important physical effect is to block the generation and transmission

of nerve impulses after local application. This is apparently the result of the drug's effect on the neuronal membranes, where it somehow interferes with ionic electrical exchange.

Cocaine also causes vasoconstriction, or constriction of the blood vessels at the site of application. By limiting the amount of blood passing around the site, this constriction limits the amount of cocaine which can be absorbed and removed to the liver for detoxification. Once the drug reaches the liver, it is destroyed at a rate equal to about one lethal dose per hour. Since this rate of detoxification is considerably slower than that of other local anaesthetics, cocaine is rarely given medically by injection.

Cocaine is used medically primarily as a local anaesthetic, particularly in operations involving the eye. It has also been used to treat asthma and colic, and for symptomatic relief of tuberculosis. Synthetic cocaine-like compounds such as procaine (Novacaine) and lidocaine (Xylocaine) have largely replaced cocaine in medical application. Despite this, the LeDain Commission Final Report states that about 26 kilograms of cocaine were used for medical purposes in Canada in 1970. In contrast, in 1980, RCMP seized 12 to 13 kilograms of smuggled cocaine in Vancouver; they believe that a great deal more enters the country undetected.

Besides blocking neuronal transmission at the site of application, cocaine has a more general stimulating effect on the central nervous system. This often produces symptoms of excitation, restlessness, euphoria and sensations of heightened physical and mental prowess. While small doses of the drug depress the heart rate, moderate doses increase it. When the drug is first administered, there is a rise in blood pressure, probably due to the vasoconstrictive action. However, the blood pressure falls gradually as the central stimulation is followed by depression. This depressant action begins at the cortex and gradually proceeds to the lower centres.

The euphoric feelings, or "rush", associated with cocaine use are extremely strong and in fact are more pronounced than those seen in practically any other psychoactive agent (including heroin). However, after only 30 minutes or so, psychological depression sets in and repeated use of the drug is necessary to maintain the "high". A cycle may result with the user repeating drug intake at short intervals sometimes as little as ten minutes apart.

The subjective stimulant effects of cocaine resemble those of amphetamines, but are somewhat more intense and have a shorter duration.

Hazards of Cocaine Use

Chronic cocaine use, especially in its freebase form, can lead to such psychological excitation during a single session that the user may succumb to an intense anxiety state with gross paranoid features. In this state, hallucinations are not uncommon and abnormal sensations produced in the peripheral nerves may convince the hyper-excited user that animals are burrowing under the skin. Attempts to dig out the "cocaine bugs" have been reported.

Due to its vasoconstricting effects, cocaine can damage tissues locally if injected, leaving small "pock marks" at the site of the injection. Long-term chronic sniffing may also destroy tissues in the nose. Holes in the nasal septum have been reported in some heavy users.

The fatal human dose of cocaine is believed to be about 1,200 milligrams, but due to wide variations in individual susceptibility and to variations in reactions dependent upon the method of administration, this dose should only be considered a rough estimate. Toxic effects from as little as 20 milligrams of cocaine have been reported; however, there have also been cases of individuals living after daily doses of 10,000 milligrams (in a series of frequent injections). Illicit users generally employ about 500 milligrams at a time.

Tolerance/Dependence/Withdrawal

It would appear from the studies conducted that repeated use of cocaine at short intervals induces a "reverse tolerance", or increased sensitivity to the drug. Thus, less and less is needed to achieve the desired effects. Research has failed to uncover any characteristic withdrawal syndrome after cessation of chronic cocaine use.

In view of the lack of tolerance and withdrawal effects, cocaine cannot strictly be termed addictive. However, a pattern of psychological dependence can develop in which the drug assumes a central role in the user's lifestyle.

Cocaine Treatment

The treatment of acute cocaine poisoning involves the intravenous administration of a short-acting barbiturate, the use of artificial respiration and efforts to block the blood flow from the site of application. The primary objective should be to limit the amount of cocaine which enters the bloodstream. Convulsions, which can occur with acute poisoning, cannot be prevented with the usual anti-convulsant drugs such as diphenylhydantoin or phenobarbital.

Cocaine and Society

During the 1970's, cocaine enjoyed a resurgence in popularity, particularly in the arts/entertainment/"jetset" circles. Today cocaine use is relatively widespread, although in comparison with other drugs it is expensive. In well-to-do metropolitan circles, "coke parties" (which can also include freebasing) are quite common.

Cocaine and the Law

Coca (*Erythroxylon coca*), its preparations, derivatives, alkaloids and salts including coca leaves, cocaine, and ecgonine are legally classified as narcotics in Canada and are regulated by the Narcotic Control Act. Under the terms of the Act unauthorized use of the substances is liable:

- a) upon summary conviction for a first offence, to a fine of \$1,000 or to imprisonment for six months or both. Upon a subsequent offense, to a fine of \$2,000 or to imprisonment for one year or both.
- b) upon conviction on indictment to imprisonment for seven years.

Unauthorized trafficking in coca or any of its derivatives or having in one's possession substances for the purposes of trafficking is an indictable offence and upon conviction can mean imprisonment for life.

Unauthorized importation into Canada or exportation from

Canada of any of the substances is an indictable offence and upon conviction, the penalty can be imprisonment for life, with a minimum penalty of seven years.

INHALANT USE

Inhalant use, "glue sniffing" or "sniffing" is the voluntary inhalation of a volatile substance to achieve an intoxicated state. These substances cause a "high" when inhaled because they contain active elements which readily vaporize to form a gas at room temperature.

Inhalant use is not a new phenomenon. During the 1850's, after the discovery of the properties of ether (an anaesthetic) and nitrous oxide (laughing gas), it was a popular recreation at social occasions to indulge in inhalants, particularly nitrous oxide. During the 1930's and 40's, sniffing gasoline fumes was popular with young children. In the mid-sixties, the inhalation of model airplane glue gave the activity its popular appellation, "glue sniffing".

The most common inhalants are toluene, benzene, ethanol, acetone, ethyl acetate, methyl acetate, naphtha, carbon tetrachloride, trichloroethane and kerosene. These are widely available to the public in various forms including model airplane glue, nail polish removers, paints, lacquers and varnish thinners, lighter fluids, cleaning fluids, gasoline, anti-freeze and aerosol sprays. Since these are common household items they are easily accessible to children.

Another group of inhalants are the "vasodilators" - amyl-nitrate, isobutyl and sec-butyl nitrate. These are usually referred to as "poppers", and are used more by adults than children.

The usual technique involving household inhalants is to pour the substance over a cloth or into a plastic bag and breath in the vapors. Less commonly, inhalant users heat the substances in a pan to increase vapor concentration or mix them with beverages to make a drink. There have also been occasional reports of individuals spraying aerosol products into their mouths.

Physical Effects of Inhalants

Inhalants in general act as a central nervous system depress-

ant, much like alcohol and anaesthetics. Because the inhalants are sniffed, the lungs pass the chemicals directly into the bloodstream, thereby speeding up their effect on the brain. The first few deep breaths of the substance rapidly produce feelings of relaxation, dizziness, a lessening of inhibitions and euphoria. The actual "high", which may last no more than a few seconds, involves sensations like those caused by alcohol combined with hallucinogenic effects such as body rushes, hot flushes, light flashes and a sense of floating away. The impairing effects of inhalants are usually more pronounced and fade much more rapidly than other drugs such as alcohol. Continued inhalation accentuates the effects and may lead to such reactions as sneezing, coughing, running nose, watery eyes and cramps. At higher levels of intoxication, the user may become delirious, suffer epileptiform seizures or sink into stupor. Extremely high doses or prolonged use can inhibit breathing and cause death. Typically, a single episode lasts from five to forty five minutes after intake stops, and is followed by drowsiness which may last for two or more hours. Headache and nausea may accompany recovery and the individual may experience partial or total amnesia (blackouts) for the period of intoxication. As with other psychoactive drugs, the effects of inhalants may also depend on the personality and mood of the user and circumstances of use.

Other adverse effects associated with the habitual use of inhalants include: memory impairment, dizziness, an inability to concentrate, a deterioration of handwriting and general signs of poor health. Irritability, hostility and disturbances in social adjustment and personality have also been observed. In most cases the physical and psychological effects of sniffing disappear when usage is stopped.

Hazards of Inhalant Use

In recent years, a number of deaths due to the inhalation of volatile substances have occurred. The majority of these have resulted from asphyxiation by suffocation. If the user loses consciousness while the plastic bag is in place over the mouth and nose, suffocation is almost inevitable.

Other fatalities have been reported in relation to sniffing trichlorethylene (cleaning fluids) or fluorocarbons (aerosols).

Termed "sudden-sniffing-death syndrome" and only partially understood, it appears to result from irregularities in heart function caused by inhalation under stress or excitement.

Short of death, chronic inhalant users risk irritation or damage to nerves, neurological systems, kidneys, lungs and other body tissues. The toxic effects of inhalants could be made worse by pre-existing liver or kidney disease or by the consumption of alcohol. While cases of permanent or fatal brain damage are rare, inhalant intoxication can produce irregular brain electrical activity. These changes appear to be of a temporary nature. Health problems stemming from the toxicity of volatile substances can often be related to specific chemicals or combinations of chemicals in those substances.

- The fluorocarbons in aerosols, benzene, tetraethyl lead, carbon tetrachloride and n-hexane, all of which are volatile substances found in commercial products, may have toxic effects when inhaled.
- Benzene, found in gasoline, can cause death when inhaled in high doses. This chemical is harmful to the blood-forming elements of the body and is believed to cause anemia and leukemia as well as abnormalities in chromosomes.
- Lead intoxication may also result from sniffing gasoline. A study of native people found that blood lead levels were higher in persons who sniffed gasoline than in those who did not.
- Carbon tetrachloride in high concentrations can cause death. Prolonged exposure may result in permanent kidney and liver damage.
- Tetraethyl lead, a gasoline additive, may cause permanent brain injury and damage the nervous system if inhaled in sufficiently large quantities.
- N-Hexane, a constituent of model airplane cement, has been related in cases of nerve disorders resulting in either permanent damage and/or extended recovery periods.

Further hazards of sniffing, resulting from impairment, are accidents, burns and self-mutilation. Property damage from the explosion of the highly volatile ingredients is not unknown.

Chronic use of inhalants can aggravate an already existing emotional disorder. Juvenile abusers are often involved in truancy, vandalism, theft and other forms of delinquency. Although sniffers are rarely involved in serious crimes of violence, they

commonly resort to shoplifting in order to obtain items for sniffing purposes. Regular sniffing can also set a pattern for alcohol dependency and other drug abuse.

Tolerance/Dependence/Withdrawal

While the occasional use of inhalants does not lead to increased tolerance of the chemicals' effects, chronic use can. Users may find that repeated sniffing may necessitate increased doses to obtain the same effect. As well, chronic use of inhalants can produce a state of psychological dependence on the substances. The evidence for the development of physical addiction still remains unclear at this time.

Withdrawal symptoms after a cessation of chronic use include chills, delirium tremens and headaches.

Inhalant Treatment

The following list of symptoms may indicate chronic use of inhalants. It should be noted, however, that these symptoms could also appear for other medical or general health reasons. Thus, a consultation with a doctor or counsellor is recommended in doubtful cases.

- chronic nosebleed
- increased salivation and spitting
- mouth and nose sores
- dry throat
- bloodshot eyes
- bad breath
- chronic thirst
- reduced muscular coordination
- fatigue

Gross physical evidence of inhalant use could include an odor of glue or solvents on hair or clothing, discarded tubes and other containers, or glue and solvent soaked rags.

In the case of acute intoxication, the effects can be relieved by providing the sniffer with fresh air. In severe or life-threatening cases where loss of consciousness occurs or there are no signs of pulse, artificial respiration should begin immediately followed

by emergency transportation to hospital. Habitual sniffers should be hospitalized and tested for tissue and organ damage. Because the chronic use of inhalants so often involves personality or emotional difficulties, psychotherapy in the form of individual or family or group counselling may also be required.

Inhalants and Society

Most inhalant users are children or adolescents. According to Health and Welfare Canada, inhalant use among young Canadians remained fairly constant between 1968 and 1975. A survey found that the percentage of students reporting the use of glue or solvents, in the six months previous to the study, ranged from 1.3% in New Brunswick to 6.6% in Ontario.

In Vancouver, drug surveys during the 1970's showed an increase in the use of inhalants throughout the decade, from 8.8% of the sampled students in 1970 to 10.6% in 1978.

Interestingly, a similar time series study investigating drug-use patterns of rural Alberta students, grades 7-12, showed a decrease during the decade. Of the students polled, 5.8% reported glue use and 10.8% solvent use in 1970, while 3.6% reported glue use and 5.3% solvent use in 1978. Another Alberta study carried out in 1979 with a sample of Edmonton students, grades 7-12, found that 7% of the girls and 8% of the boys reported use of glue or solvents at least once during the preceding 6 months.

In a 1977 survey of American high school seniors, 11.1% of the students reported use of inhalants. Only 4.4% reported using such substances on more than an experimental basis.

While most inhalant users are adolescents with an average age of about 14 years, some children become involved at half that age. In the 1976 sample of rural Alberta students already cited, the highest proportions of solvent users were found among 13 year olds (7.9%), 14 year olds (7.9%), and 15 year olds (7.7%). This correlated with the findings of the Edmonton survey which found most users in grades 7, 8, and 9. Thereafter, the incidence of inhalant use among adolescents declined sharply.

In general, use of inhalants varies inversely according to academic achievement as well as age. Analysis of the 1976 survey showed that solvent use was more than twice as com-

mon among students with grade averages below 50. For some of the children and adolescents involved in the chronic use of inhalants, sniffing is part of a larger pattern of psychological and social maladjustment. Such individuals may take up the practice as a way of responding to boredom, anxiety, low self esteem, depression, loneliness, or the desire to imitate parental drinking or drug-taking behaviour. Typically, they have inadequate relationships with their parents, school problems and dealings with police. On rare occasions, inhalants have been involved in cases of suicide and attempted suicide.

Although long-term chronic sniffers are likely troubled individuals with many serious problems, most occasional users simply sniff out of curiosity or in response to peer group influence. Eventually they lose interest and stop the practice. Certainly, the low cost and easy availability of the substances and the low-profile nature of the activity contribute to initial use.

Interestingly, inhalant use is a frequently reported phenomenon among various groups of poor, socially deprived or maladjusted young people. A 1977 Saskatchewan survey conducted among native youths ranging in age from 12-17 found that 18.3% of the respondents had used solvents. Other researchers, reporting on inhalant use involvement of a group of juvenile delinquents in Saskatchewan observed that about 10% of their sample could be classified as sniffers and that over 40% of those individuals inhaled solvents once a week or more.

Inhalants and the Law

In Canada the advertising, sale and importation of gaseous substances is regulated under the Hazardous Products Regulations, neither of which limit possession or sale for recreational use.

Only in Alberta is recreational use prohibited, since the provincial Public Health Act makes it an offence to use "an intoxicating vapour to induce intoxication, euphoria or hallucinations and to assist or cause another person to inhale or otherwise introduce into his system such a vapour". Under the Act it is an offence to sell or manufacture a product for this purpose. The penalty is a \$100 fine or 30 day imprisonment on summary conviction.

Although this legislation provides a measure of control over

the pusher, the provisions of the Act allow only for the apprehension of the user. The usual legal procedure after apprehension is to notify the sniffer's parents and apply probation. Habitual offenders may be placed in foster homes.

In 1976 peace officers in Edmonton received 43 inhalant-related complaints involving 84 juveniles. They made 8 arrests, served 15 summonses and issued 23 charges and 56 warnings.

A number of approaches have been suggested to reduce the use of inhalants. These include:

- Adding offensive materials to solvents
- Changing the chemical composition to lessen euphoric effects
- Changing the composition of the products to lessen toxic effects
- Limiting sales and/or use to adults
- Adding warnings to product labels
- Instituting community prevention programs
- Developing early warning systems to prevent the spreading use of inhalants among peers

While some measures such as changing the composition of some of the products chemically have been introduced, major progress will only be made by strengthening the family and providing more school and community-based activities.

LSD (d-lysergic acid diethylamide-25) or "acid" belongs to a large group of natural and synthetic drugs classified as hallucinogens. Included in this group are such natural substances as mescaline, derived from the peyote cactus, and psilocybin, a substance obtained from the "sacred mushroom". Mescaline and psilocybin have long been used as part of religious rituals by the Indians of North and South America.

First synthesized in 1938 by the Swiss chemists Hofmann and Stoll, the mind altering qualities of LSD were not discovered until 1943 and only then by accident. Initially, interest in LSD was centered around its possible value as an aid to psychotherapy. Recently, reports have begun to circulate concerning the use of LSD in the mid-fifties by government agencies (notably the CIA) in brain-washing experiments. However, LSD was generally a

comparatively little known drug until the mid-sixties, when, as a result of the popularized philosophies of Timothy Leary, large segments of the student population on campuses across North America began to "tune in, turn on and drop out".

Because LSD is relatively easy to manufacture and because large amounts can be transported easily, its spread was rapid. Concern over the possible effects of the drug led to its inclusion on the list of restricted drugs.

Although much of the sensationalism surrounding the use of hallucinogenic or "psychedelic" drugs has subsided and their popularity has declined somewhat, it is estimated that by 1973 some half million Canadians (about 3% of the population over the age of 12) had experienced LSD or LSD-like drugs. Recent surveys indicate that LSD's popularity increases and decreases according to as yet little understood social phenomena.

Physical Effects of LSD

Usually taken orally, LSD may occasionally be sniffed in powdered form or injected. Typical doses range from 50-400 micrograms (one ounce of LSD contains enough of the drug to affect most of the inhabitants of Edmonton and Calgary). Effects are generally felt within an hour, reach a peak within 2 or 3 hours, last 6 to 10 hours with gradual recovery occurring over a further 6 to 10 hour period.

The effects of LSD, like other drugs, depend highly on mood, expectations and experience of the user as well as the circumstances and setting in which the drug is taken.

Although classed as a hallucinogen, LSD does not produce true hallucinations (unlike psilocybin for example). What does occur are perceptual distortions and illusions related to real objects and events. Synesthesia, or the cross patching of sensory input ("seeing music", "feeling colours" and so forth) is a common effect, as is a slowing or suspension of time perception. Body sensations sometimes include numbness, tingling, chills and nausea. Physical changes include increased heart rate and blood pressure, decreased appetite and changes in breathing. Reduced performance at tasks involving co-ordination and body motor reflexes can also occur.

Mood appears to be the decisive factor determining the quali-

ty of the LSD "trip". Mind expansion or self-insight, aesthetic experiences or even mystical or spiritual sensations have been recorded by users. However, in general, the experience is intensely personal.

Hazards of LSD Use

Adverse reactions, when they occur, most often take the form of "bad trips", experiences which are characterized by some degree of fear, anxiety or depression. These usually subside when the effects of the drug wear off. The percentage rate of bad trips is difficult to determine. It seems likely that even moderate usage of LSD will result in a bad trip now and then with the incidence rising as the use increases.

A severe reaction or "freak-out" occurs when the individual experiences intense fear or panic, loss of emotional control and less commonly, paranoid delusions. One survey of street users discovered a freak-out incidence rate of 4%, or 24 in 601 trips.

A side effect of LSD use is the "flashback", wherein the user experiences a spontaneous recurrence of some aspect of a trip. Flashbacks have been known to occur weeks, months or more than a year after the last use of the drug. While not necessarily dangerous, they can be disruptive to everyday functioning. Although the exact nature of the flashback phenomenon has never been clearly defined, it could be the result of unused LSD stored in the body being activated under the stimulus of other chemicals, contact with people or artifacts associated with the original drug episode, or a disruption of brain-wave patterns and subsequent formation of new patterns. In surveys of LSD users, 15-20% of those questioned reported incidences of flashback most of which were mild in nature.

Problems resulting from LSD use are mainly of a psychological rather than a physical nature. The physical problems which do occur generally involve a circulatory system dysfunction. No human death from an LSD overdose has ever been recorded.

There is a slight risk of contaminated black market LSD although the LeDain Commission Final Report suggested that on the basis of the limited data available, most LSD sold on the street in Canada is free of dangerous impurities.

The LeDain Report states that while there is no definite link

between LSD use and chromosome damage, cancer or birth deformities, there are enough possibilities to warrant a strong warning to women who are either pregnant or expect to become so to avoid the use of LSD for either medical or non-medical purposes.

Tolerance/Dependence/Withdrawal

Tolerance to LSD develops rapidly with repeated use, but unlike other drugs, this tolerance dissipates equally rapidly. The "reverse tolerance" syndrome is also common, where the user needs less of the drug to achieve the same effect. A period of three to four days must separate trips if the full effects are to be obtained, regardless of dose. By its very nature, LSD is not a physically addictive substance. There is no instance recorded of a body adjusting to function under the continuous input of LSD since such input is impossible. Psychological dependence, where the user becomes preoccupied with the drug experience, can occur, however.

No physical dependence occurs with LSD and in fact this can only occur if the user habitually uses LSD with an addictive drug. Most users take LSD infrequently or stop completely after a time, usually as the result of a bad trip.

LSD Treatment

Typical adverse reactions to a bad trip or freak-out are best handled in a non-hospital setting in order to avoid intensifying the problem. Calm reassurance and "talking down" by a friend or experienced guide or therapist in a comfortable setting is usually successful.

Although there are drugs which can reduce the effects of LSD, they should only be used as a last resort. Major tranquillizers such as chlorpromazine (Largactil), should be especially avoided since they can complicate or accentuate the toxicity of some street drugs. Psychological methods are a preferable form of treatment.

Medical attention may be required if an individual's condition is uncertain or if any serious symptoms such as unconsciousness, breathing difficulties or high fever occur. In the case of

aggressive or dangerous behaviour, firm but gentle physical restraint may be necessary. Prolonged psychotic states or other serious emotional disturbances may require some form of long-term care.

LSD and Society

After its initial widespread use in the mid - sixties and early seventies, LSD appears to have been replaced to a large extent by other drugs. Although available, the drug is rarely seen in contemporary social settings. Prime users appear to be at junior high and high school level and to a lesser extent at colleges and universities. No longer a high-profile drug, LSD use is now a matter of personal taste. Even the "counter-culture" which so enthusiastically adopted it has turned away from its use. To some degree, this may be linked to return of the "natural" drugs - cannabis, psilocybin (magic mushrooms) and cocaine.

LSD and the Law

Included in the list of restricted drugs of the Food and Drugs Act and illegal except with special permission, LSD possession can result in a fine of \$1,000 or imprisonment for six months for a first offence with penalties rising for succeeding offenses. Upon conviction on indictment the penalties can be a fine of \$5,000 or imprisonment for three years or both.

Trafficking (the sale, distribution, transportation and import into or export out of Canada of LSD or any substance represented or held out to be LSD) is punishable upon summary conviction to imprisonment for eighteen months or upon conviction on indictment to imprisonment for ten years.

In fact, the LeDain Commission Final Report shows that between 1970 and 1972 convictions for possession resulted in fines or probation and for trafficking, jail sentences from six months to two years.

POOR

QUALITY

ORIGINAL